SEQUENCE LISTING

<110> DNAVEC RESEARCH INC.

<120> PARAMYXOVIRAL VECTORS ENCODING ANTIBODIES, AND USES THEREOF

<130> D3-A0203P

<150> JP 2002-161964

<151> 2002-06-03

<160> 63

<170> PatentIn version 3.1

<210> 1

<211> 10

<212> DNA

<213> Sendai virus

<400> 1

ctttcaccct 10

<210> 2

<211> 15

<212> DNA

<213> Sendai virus

<400> 2

ttttttcttac tacgg 15

<210> 3

<211> 18

<212> DNA

<213> Artificial

<220>

<223> Spacer sequence

<400> 3

cggccgcaga tcttcacg 18

<210> 4

<211> 18

<212> DNA

<213> Artificial

<220>

<223> an spacer sequence

<400> 4

atgcatgccg gcagatga 18

<210> 5

<211> 18

<212> DNA

<213> Artificial

<220>

<223> a primer for amplifing Sendai virus genome fragment

<400> 5

gttgagtact gcaagagc 18

<210> 6

<211> 42

<212> DNA

<213> Artificial

<220>

<223> a primer for amplifing Sendai virus genome fragment

<400> 6

tttgccggca tgcatgtttc ccaaggggag agttttgcaa cc 42

<210> 7

<211> 18

<212> DNA

<213> Artificial

<220>

<223> a primer for amplifing Sendai virus genome fragment

<400> 7

atgcatgccg gcagatga 18

<210> 8

<211> 21

<212> DNA

<213> Artificial

<220>

<223> a primer for amplifing Sendai virus genome fragment

<400> 8

tgggtgaatg agagaatcag c 21

<210> 9

<211> 1550

<212> DNA

<213> Artificial

<220>

<223> a gene framgment encoding V regions of antibody IN-1

<220>

<221> CDS

<222> (18)..(749)

<223>

<220>

<221> CDS

<222> (801)..(1505)

<223>

<400> 9

gcggccgccg tacggcc atg aaa aag aca gct atc gcg att gca gtg gca 50
Met Lys Lys Thr Ala Ile Ala Ile Ala Val Ala
1 5 10

ctg gct ggt ttc gct acc gta gcg cag gcc gaa gtt aaa ctg cat gag 98
Leu Ala Gly Phe Ala Thr Val Ala Gln Ala Glu Val Lys Leu His Glu

15 20 25

tca ggg cct ggg ctg gta agg cct ggg act tca gtg aag ata tcc tgc 146
Ser Gly Pro Gly Leu Val Arg Pro Gly Thr Ser Val Lys Ile Ser Cys
30 35 40

aag gct tct ggc tac acc ttc act aac tac tgg cta ggt tgg gta aag 194
Lys Ala Ser Gly Tyr Thr Phe Thr Asn Tyr Trp Leu Gly Trp Val Lys
45 50 55

cag agg cct gga cat gga ctt gag tgg att gga gat att tac cct gga 242
Gln Arg Pro Gly His Gly Leu Glu Trp Ile Gly Asp Ile Tyr Pro Gly
60 65 70 75

ggt ggt tat act aac tac aat gag aag ttc aag ggc aag gcc aca ctg 290
Gly Gly Tyr Thr Asn Tyr Asn Glu Lys Phe Lys Gly Lys Ala Thr Leu
80 85 90

act gca gac aca tcc tcc agc act gcc tac atg cag ctc agt agc ctg 338
Thr Ala Asp Thr Ser Ser Ser Thr Ala Tyr Met Gln Leu Ser Ser Leu
95 100 105

aca tct gag gac tct gct gtc tat ttc tgt gca aga ttt tac tac ggt 386
Thr Ser Glu Asp Ser Ala Val Tyr Phe Cys Ala Arg Phe Tyr Tyr Gly
110 115 120

agt agc tac tgg tac ttc gat gtc tgg ggc caa ggc acc acg gtc acc 434
Ser Ser Tyr Trp Tyr Phe Asp Val Trp Gly Gln Gly Thr Thr Val Thr
125 130 135

gtc tcc tca gca aag acc act cct ccg tct gtt tac cct ctg gct cct 482
Val Ser Ser Ala Lys Thr Thr Pro Pro Ser Val Tyr Pro Leu Ala Pro
140 145 150 155

ggt tct gcg gct cag act aac tct atg gtg act ctg gga tgc ctg gtc 530
Gly Ser Ala Ala Gln Thr Asn Ser Met Val Thr Leu Gly Cys Leu Val
160 165 170

aag ggc tat ttc cct gag cca gtg aca gtg acc tgg aac tct gga tcc 578
Lys Gly Tyr Phe Pro Glu Pro Val Thr Val Thr Trp Asn Ser Gly Ser
175 180 185

ctg tcc agc ggt gtg cac acc ttc cca gct gtc ctg caa tct gac ctc 626
Leu Ser Ser Gly Val His Thr Phe Pro Ala Val Leu Gln Ser Asp Leu
190 195 200

tac act ctg agc agc tca gtg act gtc ccc tcc agc acc tgg ccc agc 674
Tyr Thr Leu Ser Ser Ser Val Thr Val Pro Ser Ser Thr Trp Pro Ser
205 210 215

gag acc gtc acc tgc aac gtt gcc cac ccg gct tct agc acc aaa gtt 722
Glu Thr Val Thr Cys Asn Val Ala His Pro Ala Ser Ser Thr Lys Val

220 225 230 235

gac aag aaa atc gta ccg cgc gac tgc taaccgtagt aagaaaaact 769
Asp Lys Lys Ile Val Pro Arg Asp Cys
240

tagggtgaaa gttcatcgcg gccgtacggc c atg aaa caa agc act att gca 821
Met Lys Gln Ser Thr Ile Ala
245 250

ctg gca ctc tta ccg tta ctg ttt acc cct gtg aca aaa gcc gac atc 869
Leu Ala Leu Leu Pro Leu Leu Phe Thr Pro Val Thr Lys Ala Asp Ile
255 260 265

gag ctc acc cag tct cca gca atc atg gct gca tct gtg gga gaa act 917
Glu Leu Thr Gln Ser Pro Ala Ile Met Ala Ala Ser Val Gly Glu Thr
270 275 280

gtc acc atc aca tgt gga gca agt gag aat att tac ggt gct tta aat 965
Val Thr Ile Thr Cys Gly Ala Ser Glu Asn Ile Tyr Gly Ala Leu Asn
285 290 295

tgg tat cag cgg aaa cag gga aaa tct cct cag ctc ctg atc tat ggt 1013
Trp Tyr Gln Arg Lys Gln Gly Lys Ser Pro Gln Leu Leu Ile Tyr Gly
300 305 310 315

```
gca acc aac ttg gca gat ggc atg tca tcg agg ttc agt ggc agt gga     1061
Ala Thr Asn Leu Ala Asp Gly Met Ser Ser Arg Phe Ser Gly Ser Gly
                320                 325                 330

tct ggt aga cag tat tct ctc aag atc agt agc ctg cat cct gac gat     1109
Ser Gly Arg Gln Tyr Ser Leu Lys Ile Ser Ser Leu His Pro Asp Asp
            335                 340                 345

gtt gca acg tat tac tgt caa aat gtg tta agt act cct cgg acg ttc     1157
Val Ala Thr Tyr Tyr Cys Gln Asn Val Leu Ser Thr Pro Arg Thr Phe
        350                 355                 360

gga gct ggg acc aag ctc gag ctg aag cgc gct gat gct gca ccg act     1205
Gly Ala Gly Thr Lys Leu Glu Leu Lys Arg Ala Asp Ala Ala Pro Thr
    365                 370                 375

gta tcc atc ttc cca cca tcc agt gag cag tta aca tct gga ggt gcc     1253
Val Ser Ile Phe Pro Pro Ser Ser Glu Gln Leu Thr Ser Gly Gly Ala
380                 385                 390                 395

tca gtc gtg tgc ttc ttg aac aac ttc tac ccc aaa gac atc aat gtc     1301
Ser Val Val Cys Phe Leu Asn Asn Phe Tyr Pro Lys Asp Ile Asn Val
                400                 405                 410

aag tgg aag att gat ggc agt gaa cga caa aat ggc gtc ctg aac agt     1349
Lys Trp Lys Ile Asp Gly Ser Glu Arg Gln Asn Gly Val Leu Asn Ser
```

415 420 425

tgg act gat cag gac agc aaa gac agc acc tac agc atg agc agc acc 1397
Trp Thr Asp Gln Asp Ser Lys Asp Ser Thr Tyr Ser Met Ser Ser Thr
430 435 440

ctc acg ttg acc aag gac gag tat gaa cga cat aac agc tat acc tgt 1445
Leu Thr Leu Thr Lys Asp Glu Tyr Glu Arg His Asn Ser Tyr Thr Cys
445 450 455

gag gcc act cac aag aca tca act tca ccc att gtc aag agc ttc aac 1493
Glu Ala Thr His Lys Thr Ser Thr Ser Pro Ile Val Lys Ser Phe Asn
460 465 470 475

agg aat gag tgt tagtccgtag taagaaaaac ttagggtgaa agttcatgcg gccgc 1550
Arg Asn Glu Cys

<210> 10

<211> 244

<212> PRT

<213> Artificial

<220>

<223> an immunoglobulin IN-1 heavy chain

<400> 10

Met Lys Lys Thr Ala Ile Ala Ile Ala Val Ala Leu Ala Gly Phe Ala
1 5 10 15

Thr Val Ala Gln Ala Glu Val Lys Leu His Glu Ser Gly Pro Gly Leu
20 25 30

Val Arg Pro Gly Thr Ser Val Lys Ile Ser Cys Lys Ala Ser Gly Tyr
35 40 45

Thr Phe Thr Asn Tyr Trp Leu Gly Trp Val Lys Gln Arg Pro Gly His
50 55 60

Gly Leu Glu Trp Ile Gly Asp Ile Tyr Pro Gly Gly Gly Tyr Thr Asn
65 70 75 80

Tyr Asn Glu Lys Phe Lys Gly Lys Ala Thr Leu Thr Ala Asp Thr Ser
85 90 95

Ser Ser Thr Ala Tyr Met Gln Leu Ser Ser Leu Thr Ser Glu Asp Ser
100 105 110

Ala Val Tyr Phe Cys Ala Arg Phe Tyr Tyr Gly Ser Ser Tyr Trp Tyr
115 120 125

Phe Asp Val Trp Gly Gln Gly Thr Thr Val Thr Val Ser Ser Ala Lys
130 135 140

Thr Thr Pro Pro Ser Val Tyr Pro Leu Ala Pro Gly Ser Ala Ala Gln
145 150 155 160

Thr Asn Ser Met Val Thr Leu Gly Cys Leu Val Lys Gly Tyr Phe Pro
165 170 175

Glu Pro Val Thr Val Thr Trp Asn Ser Gly Ser Leu Ser Ser Gly Val
180 185 190

His Thr Phe Pro Ala Val Leu Gln Ser Asp Leu Tyr Thr Leu Ser Ser
195 200 205

Ser Val Thr Val Pro Ser Ser Thr Trp Pro Ser Glu Thr Val Thr Cys
210 215 220

Asn Val Ala His Pro Ala Ser Ser Thr Lys Val Asp Lys Lys Ile Val
225 230 235 240

Pro Arg Asp Cys

<210> 11

<211> 235

<212> PRT

<213> Artificial

<220>

<223> an immunoglobulin IN-1 light chain

<400> 11

Met Lys Gln Ser Thr Ile Ala Leu Ala Leu Leu Pro Leu Leu Phe Thr
1 5 10 15

Pro Val Thr Lys Ala Asp Ile Glu Leu Thr Gln Ser Pro Ala Ile Met
20 25 30

Ala Ala Ser Val Gly Glu Thr Val Thr Ile Thr Cys Gly Ala Ser Glu
35 40 45

Asn Ile Tyr Gly Ala Leu Asn Trp Tyr Gln Arg Lys Gln Gly Lys Ser
50 55 60

Pro Gln Leu Leu Ile Tyr Gly Ala Thr Asn Leu Ala Asp Gly Met Ser
65 70 75 80

Ser Arg Phe Ser Gly Ser Gly Ser Gly Arg Gln Tyr Ser Leu Lys Ile
85 90 95

Ser Ser Leu His Pro Asp Asp Val Ala Thr Tyr Tyr Cys Gln Asn Val
100 105 110

Leu Ser Thr Pro Arg Thr Phe Gly Ala Gly Thr Lys Leu Glu Leu Lys
115 120 125

Arg Ala Asp Ala Ala Pro Thr Val Ser Ile Phe Pro Pro Ser Ser Glu
130 135 140

Gln Leu Thr Ser Gly Gly Ala Ser Val Val Cys Phe Leu Asn Asn Phe
145 150 155 160

Tyr Pro Lys Asp Ile Asn Val Lys Trp Lys Ile Asp Gly Ser Glu Arg
165 170 175

Gln Asn Gly Val Leu Asn Ser Trp Thr Asp Gln Asp Ser Lys Asp Ser
180 185 190

Thr Tyr Ser Met Ser Ser Thr Leu Thr Leu Thr Lys Asp Glu Tyr Glu
195 200 205

Arg His Asn Ser Tyr Thr Cys Glu Ala Thr His Lys Thr Ser Thr Ser
210 215 220

Pro Ile Val Lys Ser Phe Asn Arg Asn Glu Cys
225 230 235

<210> 12

<211> 68

<212> DNA

<213> Artificial

<220>

<223> a synthetic oligonucleotide for constructing a Fab gene fragment

<400> 12

cggaattcgc ggccgccgta cggccatgaa aaagacagct atcgcgattg cagtggcact 60

ggctggtt 68

<210> 13

<211> 70

<212> DNA

<213> Artificial

<220>

<223> a synthetic oligonucleotide for constructing a Fab gene fragment

<400> 13

tgcagtggca ctggctggtt tcgctaccgt agcgcaggcc gaagttaaac tgcatgagtc 60

agggcctggg 70

<210> 14

<211> 70

<212> DNA

<213> Artificial

<220>

<223> a synthetic oligonucleotide for constructing a Fab gene fragment

<400> 14

tgcatgagtc agggcctggg ctggtaaggc ctgggacttc agtgaagata tcctgcaagg 60

cttctggcta 70

<210> 15

<211> 60

<212> DNA

<213> Artificial

<220>

<223> a synthetic oligonucleotide for constructing a Fab gene fragment

<400> 15

actgcagaca catcctccag cactgcctac atgcagctca gtagcctgac atctgaggac 60

<210> 16

<211> 60

<212> DNA

<213> Artificial

<220>

<223> a synthetic oligonucleotide for constructing a Fab gene fragment

<400> 16

gtagcctgac atctgaggac tctgctgtct atttctgtgc aagattttac tacggtagta 60

<210> 17

<211> 60

<212> DNA

<213> Artificial

<220>

<223> a synthetic oligonucleotide for constructing a Fab gene fragment

<400> 17

aagattttac tacggtagta gctactggta cttcgatgtc tggggccaag gcaccacggt 60

<210> 18

<211> 60

<212> DNA

<213> Artificial

<220>

<223> a synthetic oligonucleotide for constructing a Fab gene fragment

<400> 18

cgggatccct gtccagcggt gtgcacacct tcccagctgt cctgcaatct gacctctaca 60

<210> 19

<211> 70

<212> DNA

<213> Artificial

<220>

<223> a synthetic oligonucleotide for constructing a Fab gene fragment

<400> 19

cctgcaatct gacctctaca ctctgagcag ctcagtgact gtcccctcca gcacctggcc 60

cagcgagacc 70

<210> 20

<211> 70

<212> DNA

<213> Artificial

<220>

<223> a synthetic oligonucleotide for constructing a Fab gene fragment

<400> 20

gcacctggcc cagcgagacc gtcacctgca acgttgccca cccggcttct agcaccaaag 60

ttgacaagaa 70

<210> 21

<211> 70

<212> DNA

<213> Artificial

<220>

<223> a synthetic oligonucleotide for constructing a Fab gene fragment

<400> 21

gccgacatcg agctcaccca gtctccagca atcatggctg catctgtggg agaaactgtc 60

accatcacat 70

<210> 22

<211> 70

<212> DNA

<213> Artificial

<220>

<223> a synthetic oligonucleotide for constructing a Fab gene fragment

<400> 22

agaaactgtc accatcacat gtggagcaag tgagaatatt tacggtgctt taaattggta 60

tcagcggaaa 70

<210> 23

<211> 70

<212> DNA

<213> Artificial

<220>

<223> a synthetic oligonucleotide for constructing a Fab gene fragment

<400> 23

taaattggta tcagcggaaa cagggaaaat ctcctcagct cctgatctat ggtgcaacca 60

acttggcaga 70

<210> 24

<211> 72

<212> DNA

<213> Artificial

<220>

<223> a synthetic oligonucleotide for constructing a Fab gene fragment

<400> 24

accgctcgag ctgaagcgcg ctgatgctgc accgactgta tccatcttcc caccatccag 60

tgagcagtta ac 72

<210> 25

<211> 70

<212> DNA

<213> Artificial

<220>

<223> a synthetic oligonucleotide for constructing a Fab gene fragment

<400> 25

ccatccagtg agcagttaac atctggaggt gcctcagtcg tgtgcttctt gaacaacttc 60

taccccaaag 70

<210> 26

<211> 70

<212> DNA

<213> Artificial

<220>

<223> a synthetic oligonucleotide for constructing a Fab gene fragment

<400> 26

gaacaacttc taccccaaag acatcaatgt caagtggaag attgatggca gtgaacgaca 60

aaatggcgtc 70

<210> 27

<211> 79

<212> DNA

<213> Artificial

<220>

<223> a synthetic oligonucleotide for constructing a Fab gene fragment

<400> 27

caagagcttc aacaggaatg agtgttagtc cgtagtaaga aaaacttagg gtgaaagttc 60

atgcggccgc aagcttggg 79

<210> 28

<211> 80

<212> DNA

<213> Artificial

<220>

<223> a synthetic oligonucleotide for constructing a Fab gene fragment

<400> 28

tgaacgacat aacagctata cctgtgaggc cactcacaag acatcaactt cacccattgt 60

caagagcttc aacaggaatg 80

<210> 29

<211> 70

<212> DNA

<213> Artificial

<220>

<223> a synthetic oligonucleotide for constructing a Fab gene fragment

<400> 29

gacagcacct acagcatgag cagcaccctc acgttgacca aggacgagta tgaacgacat 60

aacagctata 70

<210> 30

<211> 70

<212> DNA

<213> Artificial

<220>

<223> a synthetic oligonucleotide for constructing a Fab gene fragment

<400> 30

gtgaacgaca aaatggcgtc ctgaacagtt ggactgatca ggacagcaaa gacagcacct 60

acagcatgag 70

<210> 31

<211> 70

<212> DNA

<213> Artificial

<220>

<223> a synthetic oligonucleotide for constructing a Fab gene fragment

<400> 31

ttactgtcaa aatgtgttaa gtactcctcg gacgttcgga gctgggacca agctcgagcg 60

gaagcttggg 70

<210> 32

<211> 80

<212> DNA

<213> Artificial

<220>

<223> a synthetic oligonucleotide for constructing a Fab gene fragment

<400> 32

atctggtaga cagtattctc tcaagatcag tagcctgcat cctgacgatg ttgcaacgta 60

ttactgtcaa aatgtgttaa 80

<210> 33

<211> 70

<212> DNA

<213> Artificial

<220>

<223> a synthetic oligonucleotide for constructing a Fab gene fragment

<400> 33

ggtgcaacca acttggcaga tggcatgtca tcgaggttca gtggcagtgg atctggtaga 60

cagtattctc 70

<210> 34

<211> 70

<212> DNA

<213> Artificial

<220>

<223> a synthetic oligonucleotide for constructing a Fab gene fragment

<400> 34

gcactattgc actggcactc ttaccgttac tgtttacccc tgtgacaaaa gccgacatcg 60

agctcaccca 70

<210> 35

<211> 70

<212> DNA

<213> Artificial

<220>

<223> a synthetic oligonucleotide for constructing a Fab gene fragment

<400> 35

agaaaaactt agggtgaaag ttcatcgcgg ccgtacggcc atgaaacaaa gcactattgc 60

actggcactc 70

<210> 36

<211> 70

<212> DNA

<213> Artificial

<220>

<223> a synthetic oligonucleotide for constructing a Fab gene fragment

<400> 36

agcaccaaag ttgacaagaa aatcgtaccg cgcgactgct aaccgtagta agaaaaactt 60

agggtgaaag 70

<210> 37

<211> 70

<212> DNA

<213> Artificial

<220>

<223> a synthetic oligonucleotide for constructing a Fab gene fragment

<400> 37

tgactctggg atgcctggtc aagggctatt tccctgagcc agtgacagtg acctggaact 60

ctggatcccg 70

<210> 38

<211> 70

<212> DNA

<213> Artificial

<220>

<223> a synthetic oligonucleotide for constructing a Fab gene fragment

<400> 38

gtctgtttac cctctggctc ctggttctgc ggctcagact aactctatgg tgactctggg 60

atgcctggtc 70

<210> 39

<211> 70

<212> DNA

<213> Artificial

<220>

<223> a synthetic oligonucleotide for constructing a Fab gene fragment

<400> 39

tggggccaag gcaccacggt caccgtctcc tcagcaaaga ccactcctcc gtctgtttac 60

cctctggctc 70

<210> 40

<211> 70

<212> DNA

<213> Artificial

<220>

<223> a synthetic oligonucleotide for constructing a Fab gene fragment

<400> 40

gaggtggtta tactaactac aatgagaagt tcaagggcaa ggccacactg actgcagaca 60

catcctccag 70

<210> 41

<211> 70

<212> DNA

<213> Artificial

<220>

<223> a synthetic oligonucleotide for constructing a Fab gene fragment

<400> 41

aaagcagagg cctggacatg gacttgagtg gattggagat atttaccctg gaggtggtta 60

tactaactac 70

<210> 42

<211> 70

<212> DNA

<213> Artificial

<220>

<223> a synthetic oligonucleotide for constructing a Fab gene fragment

<400> 42

tcctgcaagg cttctggcta caccttcact aactactggc taggttgggt aaagcagagg 60

cctggacatg 70

<210> 43

<211> 753

<212> DNA

<213> Artificial

<220>

<223> an anti-CD28 ScFv antibody gene (SYN205-13)

<400> 43

tctagagaca tcgagctcac tcagtctcca gcttctttgg ctgtgtctct agggcagaga 60

gccaccatct cctgcagagc cagtgagagt gttgaatatt atgtcacaag tttaatgcag 120

tggtaccagc agaagccagg acagccaccc aaactcctca tctttgctgc atccaacgta 180

gaatctgggg tccctgccag gtttagtggc agtgggtctg ggacaaactt cagcctcaac 240

atccatcctg tggacgagga tgatgttgca atgtatttct gtcagcaaag taggaaggtt 300

ccttacacgt tcggaggggg gaccaagctg gaaataaaac ggggaggcgg cggttctggc 360

ggtggcggat caggtggcgg aggctcgcag gtgaaactgc agcagtctgg acctggcctg 420

gtgacgccct cacagagcct gtccatcact tgtactgtct ctgggtttc attaagcgac 480

tatggtgttc actgggttcg ccagtctcca ggacagggac tggagtggct gggagtaata 540

tgggctggtg gaggcacgaa ttataattcg gctctcatgt ccagaaagag catcagcaaa 600

gacaactcca agagccaagt tttcttaaaa atgaacagtc tgcaagctga tgacacagcc 660

gtgtattact gtgccagaga taagggatac tcctattact attctatgga ctactggggc 720

caagggacca cggtcactgt ctcctcgtct aga 753

<210> 44

<211> 247

<212> PRT

<213> Artificial

<220>

<223> an anti-CD28 ScFv fragment encoded by SYN205-13

<400> 44

Asp Ile Glu Leu Thr Gln Ser Pro Ala Ser Leu Ala Val Ser Leu Gly
1 5 10 15

Gln Arg Ala Thr Ile Ser Cys Arg Ala Ser Glu Ser Val Glu Tyr Tyr
20 25 30

Val Thr Ser Leu Met Gln Trp Tyr Gln Gln Lys Pro Gly Gln Pro Pro
35 40 45

Lys Leu Leu Ile Phe Ala Ala Ser Asn Val Glu Ser Gly Val Pro Ala
50 55 60

Arg Phe Ser Gly Ser Gly Ser Gly Thr Asn Phe Ser Leu Asn Ile His
65 70 75 80

Pro Val Asp Glu Asp Asp Val Ala Met Tyr Phe Cys Gln Gln Ser Arg
85 90 95

Lys Val Pro Tyr Thr Phe Gly Gly Gly Thr Lys Leu Glu Ile Lys Arg
100 105 110

Gly Gly Gly Gly Ser Gly Gly Gly Gly Ser Gly Gly Gly Gly Ser Gln
115 120 125

Val Lys Leu Gln Gln Ser Gly Pro Gly Leu Val Thr Pro Ser Gln Ser
130 135 140

Leu Ser Ile Thr Cys Thr Val Ser Gly Phe Ser Leu Ser Asp Tyr Gly
145 150 155 160

Val His Trp Val Arg Gln Ser Pro Gly Gln Gly Leu Glu Trp Leu Gly
165 170 175

Val Ile Trp Ala Gly Gly Gly Thr Asn Tyr Asn Ser Ala Leu Met Ser
180 185 190

Arg Lys Ser Ile Ser Lys Asp Asn Ser Lys Ser Gln Val Phe Leu Lys
195 200 205

Met Asn Ser Leu Gln Ala Asp Asp Thr Ala Val Tyr Tyr Cys Ala Arg
210 215 220

Asp Lys Gly Tyr Ser Tyr Tyr Tyr Ser Met Asp Tyr Trp Gly Gln Gly
225 230 235 240

Thr Thr Val Thr Val Ser Ser
245

<210> 45

<211> 131

<212> DNA

<213> Artificial

<220>

<223> a NotI fragmnet containing an EIS sequence in pGEM-4Zcst

<400> 45

gcggccgcca aagttcaatg gattttcagg tgcagatttt cagcttcctg ctaatcagtg 60

cctcagtcat aatgtccaga ggatctagac cgtagtaaga aaaacttagg gtgaaagttc 120

atcgcggccg c 131

<210> 46

<211> 22

<212> PRT

<213> Mus musculus

<400> 46

Met Asp Phe Gln Val Gln Ile Phe Ser Phe Leu Leu Ile Ser Ala Ser

1 5 10 15

Val Ile Met Ser Arg Gly
20

<210> 47
<211> 70
<212> DNA
<213> Artificial

<220>
<223> an synthetic oligonucleotide for constructing an anti-CD28cst gene fragment

<400> 47
tctagagaca tcgagctcac tcagtctcca gcttctttgg ctgtgtctct agggcagaga 60

gccaccatct 70

<210> 48
<211> 70
<212> DNA
<213> Artificial

<220>

<223> an synthetic oligonucleotide for constructing an anti-CD28cst gene fragment

<400> 48

agggcagaga gccaccatct cctgcagagc cagtgagagt gttgaatatt atgtcacaag 60

tttaatgcag 70

<210> 49

<211> 70

<212> DNA

<213> Artificial

<220>

<223> an synthetic oligonucleotide for constructing an anti-CD28cst gene fragment

<400> 49

atgtcacaag tttaatgcag tggtaccagc agaagccagg acagccaccc aaactcctca 60

tctttgctgc 70

<210> 50

<211> 70

<212> DNA

<213> Artificial

<220>

<223> an synthetic oligonucleotide for constructing an anti-CD28cst gene fragment

<400> 50

ccttacacgt tcggaggggg gaccaagctg gaaataaaac ggggaggcgg cggttctggc 60

ggtggcggat 70

<210> 51

<211> 70

<212> DNA

<213> Artificial

<220>

<223> an synthetic oligonucleotide for constructing an anti-CD28cst gene fragment

<400> 51

cggttctggc ggtggcggat caggtggcgg aggctcgcag gtgaaactgc agcagtctgg 60

acctggcctg 70

<210> 52

<211> 70

<212> DNA

<213> Artificial

<220>

<223> an synthetic oligonucleotide for constructing an anti-CD28cst gene fragment

<400> 52

agcagtctgg acctggcctg gtgacgccct cacagagcct gtccatcact tgtactgtct 60

ctgggttttc 70

<210> 53

<211> 70

<212> DNA

<213> Artificial

<220>

<223> an synthetic oligonucleotide for constructing an anti-CD28cst gene fragment

<400> 53

gacaactcca agagccaagt tttcttaaaa atgaacagtc tgcaagctga tgacacagcc 60

gtgtattact 70

<210> 54

<211> 70

<212> DNA

<213> Artificial

<220>

<223> an synthetic oligonucleotide for constructing an anti-CD28cst gene fragment

<400> 54

tgacacagcc gtgtattact gtgccagaga taagggatac tcctattact attctatgga 60

ctactggggc 70

<210> 55

<211> 53

<212> DNA

<213> Artificial

<220>

<223> an synthetic oligonucleotide for constructing an anti-CD28cst gene fragment

<400> 55

tctagacgag gagacagtga ccgtggtccc ttggccccag tagtccatag aat 53

<210> 56

<211> 70

<212> DNA

<213> Artificial

<220>

<223> an synthetic oligonucleotide for constructing an anti-CD28cst gene fragment

<400> 56

acttggctct tggagttgtc tttgctgatg ctctttctgg acatgagagc cgaattataa 60

ttcgtgcctc 70

<210> 57

<211> 70

<212> DNA

<213> Artificial

<220>

<223> an synthetic oligonucleotide for constructing an anti-CD28cst gene fragment

<400> 57

cgaattataa ttcgtgcctc caccagccca tattactccc agccactcca gtccctgtcc 60

tggagactgg 70

<210> 58

<211> 70

<212> DNA

<213> Artificial

<220>

<223> an synthetic oligonucleotide for constructing an anti-CD28cst gene fragment

<400> 58

gtccctgtcc tggagactgg cgaacccagt gaacaccata gtcgcttaat gaaaacccag 60

agacagtaca 70

<210> 59

<211> 70

<212> DNA

<213> Artificial

<220>

<223> an synthetic oligonucleotide for constructing an anti-CD28cst gene fragment

<400> 59

ccccctccga acgtgtaagg aaccttccta ctttgctgac agaaatacat tgcaacatca 60

tcctcgtcca 70

<210> 60

<211> 70

<212> DNA

<213> Artificial

<220>

<223> an synthetic oligonucleotide for constructing an anti-CD28cst gene fragment

<400> 60

tgcaacatca tcctcgtcca caggatggat gttgaggctg aagtttgtcc cagacccact 60

gccactaaac 70

<210> 61

<211> 70

<212> DNA

<213> Artificial

<220>

<223> an synthetic oligonucleotide for constructing an anti-CD28cst gene fragment

<400> 61

cagacccact gccactaaac ctggcaggga ccccagattc tacgttggat gcagcaaaga 60

tgaggagttt 70

<210> 62

<211> 22

<212> DNA

<213> Artificial

<220>

<223> a synthetic primer F6

<400> 62

acaagagaaa aaacatgtat gg 22

<210> 63

<211> 23

<212> DNA

<213> Artificial

<220>

<223> a synthetic primer R199

<400> 63

gataacagca cctcctcccg act 23